

Master Specification

Part RD-BP-C3

Construction of Asphalt Pavement

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RD-BP-C3 Construction of Asphalt Pavement

1 General

- a) This Master Specification Part sets out the requirements for the construction of asphalt pavements including:
- i) the documentation requirements, as set out in section 2;
 - ii) the material requirements, as set out in section 3;
 - iii) the constraints to the placement of asphalt, as set out in section 4;
 - iv) the crack sealing requirements, as set out in section 5;
 - v) the pavement surface preparation requirements, as set out in section 6;
 - vi) the requirements for the placement of asphalt, as set out in section 7;
 - vii) the sampling and testing requirements, as set out in section 8;
 - viii) the requirements for the properties of finished asphalt pavements, as set out in section 9;
 - ix) the requirements for discarding of asphalt, as set out in section 10;
 - x) the test procedures, as set out in section 11;
 - xi) the Hold Point requirements, as set out in section 12; and
 - xii) the verification requirements and records, as set out in section 13.
- b) The construction of asphalt pavements must comply with the Reference Documents, including:
- i) AS 1160 Bituminous emulsions for the construction and maintenance of pavements;
 - ii) AS 1289.1.4.2 Methods of testing soils for engineering purposes, Method 1.4.2: Sampling and preparation of soils - Selection of sampling or test sites - Stratified random number method;
 - iii) AS 2008 Bitumen for pavements;
 - iv) AS 2150 Asphalt - A guide to good practice;
 - v) AGPT Part 4B: Asphalt;
 - vi) AS 2706 Numerical values - Rounding and interpretation of limiting values;
 - vii) AS/NZS 2891.8 Methods of sampling and testing asphalt, Method 8: Voids and volumetric properties of compacted asphalt mixes;
 - viii) AS/NZS 2891.9.2 Methods of sampling and testing asphalt, Method 9.2: Determination of bulk density of compacted asphalt - Presaturation method;
 - ix) AS/NZS 2891.9.3 Methods of sampling and testing asphalt, Method 9.3: Determination of bulk density of compacted asphalt - Mensuration method;
 - x) ASTM D3549 Standard Test Method for Thickness or Height of Compacted Asphalt Mixture Specimens;
 - xi) Department Test Procedure TP425 Sampling of Asphalt (available from: https://dit.sa.gov.au/standards/test_procedures); and
 - xii) Department Test Procedure TP435 Determination of the Maximum Density of Asphalt - Water Displacement Method (available from: https://dit.sa.gov.au/standards/test_procedures).

2 Documentation

2.1 Construction Documentation

In addition to the requirements of PC-CN3 “Construction Management”, the Construction Documentation must include:

- a) a provision for traffic management (if not already covered in the Workzone Traffic Management Plan);
- b) a procedure for preparation of the surface;
- c) a procedure for setting out;
- d) a procedure for tack coating;
- e) a procedure for placing the mix;
- f) a procedure detailing the construction method and proposed measures to manage the pavement performance risks of asphalt placement of any mix less than 30 mm thick (as required by section 4.1a);
- g) a procedure demonstrating adequate compaction of mixes when the time between batching and delivery into the paver hopper exceeds 3 hours, as required by section 4.1c);
- h) where the Contractor proposes to use WMA at lower temperatures than stated in Table RD-BP-C3 4-1, evidence demonstrating that such a mix can be compacted to meet the requirements of this Master Specification Part, as required by section 4.2g);
- i) a procedure for placement of any mix below 15°C (as required by section 4.2h)); details for the protection of wearing course not open to traffic (as required by section 4.3b));
- j) a procedure for placement of crack sealing (including details of nominated product) or alternative crack sealing methods, as required in section 5.1a);
- k) a procedure for placement of OGA and SMA mixes (as required by section 7.1);
- l) a procedure to ensure traceability of the asphalt product during placement for production of mix from an alternative plant, as required by section 7.1e);
- m) a procedure for level control and compaction;
- n) the finished asphalt pavement properties;
- o) the sampling and testing requirements; and
- p) a plan of areas of asphalt which cannot be placed using plant (material transfer device) as required by section 9.7a)i).

2.2 Quality Management Records

In addition to the requirements of PC-QA1 “Quality Management Requirements” or PC-QA2 “Quality Management Requirements for Major Projects” (as applicable), the Quality Management Records must include:

- a) records of the range of mix temperatures, as required by section 4.2i);
- b) tack coat spray sheets as required by section 6.4e);
- c) test results demonstrating conforming asphalt properties as required by section 8g); and
- d) verification requirements and records required in section 13.

3 Materials

- a) The Contractor must ensure that asphalt complies with RD-BP-S2 “Supply of Asphalt”.

- b) The Contractor must ensure that sprayed bituminous surfacing complies with RD-BP-D2 “Design and Application of Sprayed Bituminous Surfacing”.

4 Constraints to the placement of asphalt

4.1 General

- a) Where a layer of asphalt is laid less than 30 mm in thickness for any reason except fine dense mixes as defined in RD-BP-S2 “Supply of Asphalt”, the Contractor must submit a procedure detailing the construction method and proposed measures to manage the pavement performance risks as part of the Construction Documentation.
- b) The Contractor must ensure that all asphalt wearing courses, including DGA, OGA and SMA, meet the requirements of RD-BP-D4 “Surface Characteristics of Flexible Pavements”.
- c) Modified binder mixes must not be used when the time between batching and delivery into the paver hopper exceeds 3 hours, unless the Contractor can demonstrate in the Construction Documentation that such a mix can be adequately compacted.

4.2 Temperature restrictions

- a) The Contractor must ensure that asphalt mix is only placed at temperatures which conform to AS 2150 Asphalt - A guide to good practice. The relevant minimum mix temperature as referred to in AS 2150 Asphalt - A guide to good practice, must be the temperature of the mix at the time that it is first placed on the surface.
- b) Minimum spreading temperatures must be in accordance with AS 2150 Asphalt - A guide to good practice, for dense graded asphalt.
- c) SMA mixes containing C320 binder must be at a minimum 160°C, and mixes incorporating modified binders must be at a minimum 170°C.
- d) Spreading temperatures for OGA, including those with modified binders, must be 140°C to 155°C as required by AS 2150 Asphalt - A guide to good practice.
- e) Asphalts with additives or foam conforming to the requirements of RD-BP-S2 “Supply of Asphalt” may be compacted at lower temperatures to those required in this section 4.2 but must not be below 120°C.
- f) Applicability of mix types for a range of pavement layer thickness and temperatures (measured in the shade) must be as indicated in Table RD-BP-C3 4-1.
- g) WMA must not be used at lower temperatures than stated in Table RD-BP-C3 4-1, unless the Contractor can demonstrate in the Construction Documentation that such a mix can be compacted to meet the requirements of this Master Specification Part.
- h) Placement for any of any mix between below 15°C must have a procedure submitted as part of the Construction Documentation.
- i) The range of mix temperatures must be included as part of the Quality Management Records.

Table RD-BP-C3 4-1 Mix types for dense graded asphalt

Pavement surface temperature (°C)	Nominal layer thickness (mm)	
	≤40	41 to 100
0 to <10	Refer section 4.1a)	HMA with additive
10 to 20	a) HMA with additive (if <15°C) b) HMA or HMA with additive (if ≥15°C)	HMA or HMA with additive
> 20	HMA with additive or HMA or WMA	HMA or HMA with additive or WMA

4.3 Wearing course restrictions

- a) The Contractor must ensure that the wearing course is not placed on a bituminous seal, including a SAMI seal, earlier than one day or later than 7 days of the seal being commenced.
- b) The wearing course must not be laid earlier than 2 weeks prior to the opening to traffic, unless the Contractor prepares and implements a procedure to protect the wearing course from any deleterious environmental effects, which must be submitted as part of the Construction Documentation.
- c) The Contractor must ensure that traffic is not permitted on any wearing course until it has cooled to a temperature below 65°C except for SMA, medium duty dense graded asphalt and heavy duty dense graded asphalt, which must not be trafficked until it has cooled to a temperature below 30°C.
- d) Water sprays must not be used to cool the road surface until the surface temperature is below 70°C.
- e) The Contractor must ensure that the placement of asphalt wearing course meets the requirements of RD-BP-D4 “Surface Characteristics of Flexible Pavements”.
- f) In addition to the requirements of this section 4.3, the Contractor must meet the traffic management requirements of PC-SM1 “Traffic and Pedestrian Management”.

5 Crack sealing

5.1 General

- a) Prior to the placement of asphalt for all pavement types (including spray seals and wearing course), any remaining cracks greater than 3 mm in width must be sealed with a crack sealant conforming to the requirements of RD-BP-S3 “Supply of Pavement Crack Sealant” or other alternative methods approved in the Construction Documentation.
- b) The Contractor must ensure that crack sealing treatment is undertaken in accordance with the requirements of:
 - i) RD-BP-S3 “Supply of Pavement Crack Sealant”;
 - ii) RD-BP-C8 “Application of Pavement Crack Sealant”; and
 - iii) this section 5.
- c) At least 14 days prior to the use of the crack sealing product, the Contractor must submit the manufacturer’s instructions and product performance data.
- d) Submission of the information required by section 5.1c) will constitute a **Hold Point**. The Contractor must not use the proposed crack sealing product until this Hold Point has been released.

5.2 Material

- a) The Contractor must ensure that the crack sealing compound is:
 - i) Class 170 bitumen to AS 2008 Bitumen for Pavements;
 - ii) modified with an appropriate polymer; and
 - iii) designed to penetrate the crack, adhere to the crack surface and resist further crack activity.
- b) The Contractor must ensure that the material remains stable on the pavement surface during periods of extreme temperature.
- c) Gritting off of sealant or plugging excessively deep cracks prior to sealing must be undertaken with SA 5-2, 5-2 mm sealing aggregate.

5.3 Crack sealing treatment

- a) The Contractor must ensure that, prior to placement of sealant, all cracks are thoroughly cleaned of foreign material, without damage to the adjoining sound pavement, to provide a clean, dry surrounding.
- b) If the pavement is damp, warm or hot compressed air may be used in the drying of the surface of the crack.
- c) Crack sealing must not be undertaken unless the surfaces of the cracks are dry. Cracks must be cleaned to a depth of between 10 to 15 mm. In deeper cracks, the crack may be plugged with SA 5-2, 5-2 mm sealing aggregate to within 10 to 15 mm of the pavement surface.
- d) The Contractor must ensure that all cracks are filled with sealant material to a level of not less than 10 mm below the pavement surface.
- e) The Contractor must ensure that the level of sealant after gritting is flush with the adjoining pavement. The width of the visible bond on the pavement surface must be as narrow as is practical. The Contractor must ensure that there is no run out of the sealant over the asphalt surface beyond the crack length.

5.4 Gritting

- a) The Contractor must place 5-2 mm grit on the surface of all crack sealed material while it is hot and prior to vehicular traffic. Grit must be placed at the minimum application necessary to prevent pick-up of the sealant by traffic.
- b) Following completion of the crack sealing treatment a **Hold Point** will apply. Further pavement surfacing Works must not proceed until this Hold Point has been released.

6 Pavement surface preparation

6.1 General

- a) The Contractor must ensure that pavement surface preparation is carried out in accordance with AS 2150 Asphalt - A guide to good practice and this section 6.
- b) Following pavement surface preparation, a **Hold Point** will apply. Placement of asphalt works must not occur until this Hold Point has been released.

6.2 Overlay placed to specified design levels

- a) This section 6.2 only applies where an asphalt overlay is to be placed to specified design levels on an existing pavement.
- b) The Contractor must ensure that the existing pavement is surveyed and survey data submitted to the Principal in accordance with section 6.2e). For each layer, the required thickness of asphalt must be written on the existing surface at each point where there is a specified level.
- c) Crack sealing must be applied to an existing pavement in accordance with section 5.
- d) Where multiple layers are to be placed, the Contractor must prepare a plan and cross sections showing the layer configurations and areas to be planed. This overlay plan must be submitted to the Principal in accordance with section 6.2e).
- e) Submission of the survey data required in section 6.2b) and overlay plan required by section 6.2d) constitutes a **Hold Point**. Asphalt overlay must not be placed until the Hold Point has been released.

6.3 Planing

- a) Where the minimum layer thickness cannot be achieved within the specified tolerances, the Contractor must ensure that the existing surface is planed to achieve the required layer thickness.

- b) Where an overlay has multiple layers, edge planing must be undertaken for each layer so as to ensure that the minimum layer thickness is achieved and is keyed into the existing pavement.
- c) The Contractor must ensure that all planing is carried out in accordance with RD-BP-C1 “Cold Planing”.
- d) Following completion of the preparation of the surface and prior to the application of the tack coat as required in section 6.4, the Hold Point in section 6.1b) will apply. Tack coating must not proceed until the Hold Point has been released.

6.4 Tack coating

- a) The Contractor must ensure that tack coats consist of CRS grade emulsion to AS 1160 Bitumen emulsions for construction and maintenance of pavements, uniformly sprayed at ambient temperature (for 60% residual bitumen emulsions or in accordance with the manufacturer’s specification for higher percentages of bitumen).
- b) The Contractor must ensure that tack coat is applied at the following locations:
 - i) at vertical edges between existing and new asphalt, including the vertical face of kerb and gutter that will have new asphalt placed against it;
 - ii) on top of existing asphalt layers; and
 - iii) on top of new asphalt not placed on the same day.
- c) The tack coat for vertical edges must be applied at a rate sufficient to ensure bond at the joint between the old and new asphalt pavements.
- d) The tack coat to be applied on top of existing asphalt layers and on top of new asphalt not placed on the same day must be applied at a rate between 0.2 l/m² and 0.4 l/m² of residual binder to ensure adequate bond between pavement layers and must be uniformly applied to the surface prior to placement of asphalt.
- e) Tack coat must be applied with a tolerance of ±0.05 litre/square metre of the specified application rate. The Contractor must supply the actual spread rates, including litres used and area covered for each Work Lot and included as part of the Quality Management Records.
- f) The Contractor must ensure that asphalt is not placed until the tack coat is broken.
- g) The Contractor must minimise construction traffic over tack coated surfaces.
- h) The Contractor must coordinate work so that no tack coated surface is opened to traffic.

7 Placement of asphalt

7.1 General

- a) The Contractor must spread asphalt so as to:
 - i) minimise segregation and loss of materials;
 - ii) produce a homogeneous product;
 - iii) achieve the specified insitu air voids relative compaction for dense graded asphalt, SMA or OGA before the asphalt has cooled; and
 - iv) provide the specified thickness of asphalt.
- b) The Contractor must ensure that asphalt spreading methods follow the guide to good practice set out in AS 2150 Asphalt - A guide to good practice. The paver must be a self-propelled paving machine with automatic level control.
- c) Hand placement of asphalt must be used only for minor correction of the existing surface and in areas where placement with a paver is impracticable.

- d) Laying of mix must be in the direction of traffic, unless circumstances such as traffic restrictions and safety requirements prevent this.
- e) Other than in an emergency situation, if the Contractor proposes to source asphalt from a plant other than nominated in the Construction Documentation during a day's production, the Contractor must provide 48 hours' prior notice to the Principal. A procedure to ensure traceability of the product during placement must be provided as part of the Construction Documentation prior to production of mix from an alternative plant.
- f) If it becomes necessary to use more than one plant because of a plant breakdown, the Contractor must provide immediate notification and details of the alternative mix to the Principal.
- g) The Contractor must ensure that each course is compacted uniformly to the full depth and over the full width. Compaction methods must be in accordance with AS 2150 Asphalt - A guide to good practice. The Contractor must ensure that compaction does not commence before all deficiencies in the spreading of the mix are corrected.
- h) The Contractor must ensure that, at the time of placing asphalt, the existing surface is dry.
- i) A **Hold Point** applies between individual layers of asphalt. The placement of the following asphalt layer must not commence until this Hold Point has been released.

7.2 Protection of road fixtures

The Contractor must prevent tack coat, binder, aggregate, asphalt or other material used in the Works from entering, adhering or obstructing gratings, hydrants, valve boxes, inspection pit covers, kerbs and other road fixtures.

7.3 Joints

The Contractor must ensure that joints are constructed in accordance with the pavement drawings, AS 2150 Asphalt - A guide to good practice, the Department Standard Drawings and otherwise meet the following requirements:

- a) the mix must be spread in a manner which ensures continuity of placing and the number and extent of joints is kept to a minimum;
- b) the density and surface finish at joints must meet the requirements of this Master Specification Part, and joints must be well sealed;
- c) joints between old and new pavements, and between sections of work which have not been placed on the same day must have tack coat applied in accordance with section 6.4;
- d) longitudinal joints in successive layers must be staggered at least 150 mm. Transverse joints in successive layers must be staggered at least 1.0 m. Permanent transverse joints at the starts and ends of runs must be ramped at the maximum rate of 1 in 20 down to a final edge which must not exceed 10 mm in height;
- e) all temporary joints which are to be opened to traffic must be ramped at the maximum rate of 1 in 10 down to a final edge which must not exceed 10 mm in height;
- f) prior to subsequent laying of mix adjacent to a temporary joint, the temporary ramp must be cut back and removed to expose a near vertical face of fresh dense asphalt prior to the subsequent laying of the adjacent run;
- g) in making the joint along any adjoining edge such as kerb, gutter or an adjoining pavement, and after the mix is placed by the finishing machine, sufficient hot material must be carried back to fill any space left open. This joint must be properly "set-up" with the back of a rake or lute at proper height and level to receive the maximum compression under rolling; and
- h) the wearing course for all pavement types and pavement overlay must be laid in such a manner that the longitudinal joints correspond as far as practicable with the lane lines and, in particular, must avoid the wheel paths.

8 Sampling and testing

- a) Sampling locations for density compliance assessment must be undertaken on a stratified random basis in accordance with AS 1289.1.4.2 Methods of testing soils for engineering purposes, Method 1.4.2: Sampling and preparation of soils - Selection of sampling or test sites - Stratified random number method.
- b) Sampling is applicable for standard road width and length of asphalt layers and not ad-hoc patches and other non-standard asphalt layers.
- c) The sampling frequency must be in accordance with Table RD-BP-C3 8-1 and Table RD-BP-C3 8-2.
- d) Where multiple lower layers of asphalt are placed on the same day, cores taken in accordance with section 8a) and section 8c) may be divided to provide test samples for each layer, rather than having a separate core taken for each lower asphalt layer. This section 8d) does not apply to wearing course layers.
- e) The Principal may otherwise direct the Contractor prior to commencement of work to undertake sampling and compaction testing on Works with 50 tonnes or less quantity.
- f) All cores taken for a pavement must be reported for voids and thickness. No core must be taken within 150 mm of a free edge, and no more than one core per lot must be taken within 150 mm of a joint.
- g) In accordance with section 13, the Contractor must provide results of all cores taken from the pavement, whether these cores are for the Contractor's own internal processes or otherwise. Tests for density, air voids and layer thickness must be carried out on each core.
- h) Coring is not required when asphalt is placed on concrete bridge decks.
- i) If the Contractor elects to use density gauges and pavement quality index (PQI) devices, the results must be used for compaction guidance only.

Table RD-BP-C3 8-1 Sampling and testing frequency for coarse heavy duty dense graded asphalt, OGA and SMA

Work Lot quantity (t)	Minimum number of core compaction samples and tests
51 to 150	4
151 to 300	6
>301	6 plus 1 for each additional 100 t of delivered mix or part thereof.

Table RD-BP-C3 8-2 Sampling and testing frequency for fine dense mixes

Work Lot quantity (road length (m))	Minimum number of core compaction samples and tests
0 to 50	0
51 to 400	4
>401	4 plus 1 for each additional 150 m of road length or part thereof.

9 Property of finished asphalt pavement

9.1 General

The Contractor must ensure that finished asphalt complies with the requirements specified in section 13.

9.2 Compaction acceptance criteria - quality standards

- a) The Contractor must ensure that statistical analysis using an unknown variability scheme is used to determine acceptance of the compaction of asphalt layers.
- b) Compliance will be based on the analysis of a random set of tests taken from each Work Lot. Compliance must be determined indirectly in terms of percentage defective compared to the desired quality of the lot (10% defective) at either the low or high limit value.
- c) A 90% probability assurance is required that accepted Work Lots comply with the desired quality at either the low or high limit value. The acceptability characteristic k , quantified in Table RD-BP-C3 9-1 is used to provide this statistical assurance.
- d) A Work Lot for the purposes of this Master Specification Part must not exceed a day's work. Compliance will apply to the whole of the Work Lot from which the set of tests is taken.

9.3 Relative compaction

- a) The relative compaction of a core must be the bulk density expressed as a percentage of mean maximum density and reported in in-situ air voids terms using AS/NZS 2891.8 Methods of sampling and testing asphalt, Method 8: Voids and volumetric properties of compacted asphalt mixes. The mean maximum density value must be the arithmetic mean of the test results for that mix within a Work Lot, provided that they meet all of the following criteria:
 - i) the binder content of the samples tested are within $\pm 0.3\%$ of the job mix binder content; and
 - ii) there has been no change in mix components or proportions.
- b) A low and high characteristic value of air voids content (L_{vc} and H_{vc}) of a Work Lot must be calculated from the formula, $x - ks$ in the case of the low value, and $x + ks$ in the case of the high value. x and s are the mean and standard deviations respectively of the individual air voids test values of the lot and k is a constant depending on the number of test values in the lot as shown in Table RD-BP-C3 9-1.
- c) Compaction air voids data must be calculated and reported to 2 decimal places and rounded to one for the first decimal point as described in AS 2706 Numerical values - rounding and interpretation of limiting values.

Table RD-BP-C3 9-1 k value

Number of tests	k	Number of tests	k
4	0.62	13	0.877
5	0.68	14	0.890
6	0.72	15	0.901
7	0.76	16	0.910
8	0.78	17	0.919
9	0.81	18	0.928
10	0.83	19	0.937
11	0.85	20	0.946
12	0.86	21	0.952

9.4 Compaction criteria

The Contractor must ensure that compaction complies with Table RD-BP-C3 9-2. The target insitu air voids are the mean of the limits provided.

Table RD-BP-C3 9-2 Compaction criteria

Asphalt mixes	Characteristic air voids (%) - min	Characteristic air voids (%) - max
AC10M	4.0	8.0
AC10L	2.0	6.0
AC14M	2.5	7.0
AC14HB (high binder)	1.0	5.0
SMA	1.0	5.0
OGA	18.0	25.0
Fine AC7	2.0	6.0
Fine AC10	2.5	7.0

9.5 Tolerances on asphalt layers

- If the asphalt is to be placed to specified design levels, the Contractor must ensure that the finished level of asphalt layers is as specified in the Contract Documents.
- Where asphalt is to be placed adjacent to kerb and gutter, the wearing course must be constructed within a tolerance of +5 mm, -0 mm.
- At joints between the surface of new and existing pavements, the levels must be flush.
- If tolerances of base courses and intermediate courses are not specified, the tolerance is ± 10 mm.
- Tolerances on the specified lateral position of asphalt treatments must be ± 50 mm.
- The thickness of dense graded mix, SMA and OGA wearing course laid on asphalt base must be determined from the specified spread rate using an assumed density of 2,400 kg/m³, 2,400 kg/m³ and 1,900 kg/m³ respectively.

9.6 Surface irregularity and finish

- The Contractor must ensure that surface irregularities of asphalt courses, as measured by deviation from a 3 m straight edge, comply with Table RD-BP-C3 9-3.
- The Contractor must ensure that the surface irregularities of asphalt courses at longitudinal and transverse joints, as measured by deviation from a 1.2 m straight edge placed centrally and at right angles over the joint, comply with Table RD-BP-C3 9-4.
- The Contractor must ensure that the surface of finished asphalt courses is free of segregated or "bony" areas, soft and "fatty" areas, ravelling and loose material, surface cracking, shoving and ruts.
- The pavement surface, including longitudinal and transverse joints, must not pond water.

Table RD-BP-C3 9-3 Surface irregularity - general

Asphalt layer	Maximum deviation (mm)
Wearing course	5
Correction (levelling) and intermediate courses	10
Base courses	15
Base courses (where no correction and intermediate courses)	10

Table RD-BP-C3 9-4 Surface irregularity - joints

Asphalt layer	Maximum deviation (mm)
Wearing course	3
Correction and intermediate courses	5

9.7 Major project requirements

- a) Where a Project is estimated to contain more than 50,000 t of asphalt, the Contractor must:
 - i) use a material transfer device to place asphalt for all layers of asphalt pavement except localised areas as shown in the Construction Documentation to increase the quality and consistency of asphalt placement and properties; and
 - ii) supply and place wearing course mixes to meet surfacing characteristics in accordance with RD-BP-D4 "Surface Characteristics of Flexible Pavements".
- b) The Contractor must use a hand-held gas flaming torch or equivalent technique to improve the asphalt joints if a parallel asphalt mat is not placed on the same day.
- c) A **Hold Point** will apply between individual layers of asphalt and waterproof membrane.

10 Discarded asphalt

All excess or discarded asphalt is the property of the Contractor and must be disposed of by the Contractor.

11 Test procedures

The Contractor must use the test procedures in Table RD-BP-C3 11-1 to verify conformance with this Master Specification Part.

Table RD-BP-C3 11-1 Test procedures

Test	Test procedure
Site selection by stratified random technique	AS 1289.1.4.2 Methods of testing soils for engineering purposes, Method 1.4.2: Sampling and preparation of soils - Selection of sampling or test sites - Stratified random number method
Sampling of asphalt	Department Test Procedure TP425 Sampling of Asphalt
Determination of the maximum density of asphalt - water displacement method	Department Test Procedure TP435 Determination of the Maximum Density of Asphalt - Water Displacement Method and AS 2891.7.1 Determination of maximum density of asphalt, Method 7.1 - Water displacement method
Bulk density of compacted asphalt specimens: pre-saturation method for dense graded	AS/NZS 2891.9.2 Methods of sampling and testing asphalt, Method 9.2: Determination of bulk density of compacted asphalt - Presaturation method
Bulk density of compacted asphalt specimens: mensuration method for open graded	AS/NZS 2891.9.3 Methods of sampling and testing asphalt, Method 9.3: Determination of bulk density of compacted asphalt - Mensuration method
Measurement of thickness or height of compacted asphalt	ASTM D3549 Standard Test Method for Thickness or Height of Compacted Asphalt Mixture Specimens
Voids - calculation	AS/NZS 2891.8 Methods of sampling and testing asphalt, Method 8: Voids and volumetric properties of compacted asphalt mixes

12 Hold Points

Table RD-BP-C3 12-1 details the review period or notification period, and type (documentation or construction quality) for each Hold Point referenced in this Master Specification Part.

Table RD-BP-C3 12-1 Hold Points

Section reference	Hold Point	Documentation or construction quality	Review period or notification period
5.1d)	Submission of crack sealing product information and manufacturer's instructions	Documentation	7 Business Days review
5.4b)	Following completion of crack sealing treatment	Construction quality	As necessary
6.1b)	Following pavement surface preparation and prior to the placement of asphalt.	Construction quality	2 hours notification
6.2e)	On submission of survey data and overlay plan prior to overlay work	Documentation	2 Business Days review
7.1i)	Between individual layers of asphalt	Construction quality	6 hours notification
9.7c)	Between individual layers of asphalt and waterproof membrane	Construction quality	6 hours notification

13 Verification requirements and records

The Contractor must supply written verification as part of the Quality Management Records that the requirements listed in Table RD-BP-C3 13-1 have been complied with.

Table RD-BP-C3 13-1 Verification requirements

Subject	Property	Test frequency	Acceptance limits
Temperature restriction	The placement of asphalt	Per Work Lot	Refer section 9
Wearing course	Surface characteristics	Refer RD-BP-D4 "Surface Characteristics of Flexible Pavements"	Refer RD-BP-D4 "Surface Characteristics of Flexible Pavements" or where specified
Crack sealing	Pavement crack treatment	Calculated for total volume of sealant	Refer section 5
Tack coat	Application rate	Calculated for each application of tack coat	± 0.05 l/m ² of the specified application rate
Coring	Sampling and testing	Refer section 9	Refer section 9
Compaction	In-situ air voids	Refer section 9	Refer section 9
Asphalt laid to design levels	Level of course	As specified in PC-S11 "Site Surveys"	Unless detailed otherwise the following must apply: a) wearing course: ± 5 mm of nominal thickness b) other layers: $\pm 10\%$ nominal thickness
Asphalt laid to nominal thickness or	Average layer thickness	Refer section 9	Wearing course: ± 5 mm of nominal thickness Other layers: $\pm 10\%$ nominal thickness
	Minimum layer thickness	Refer section 9	Nominal thickness minus 5 mm